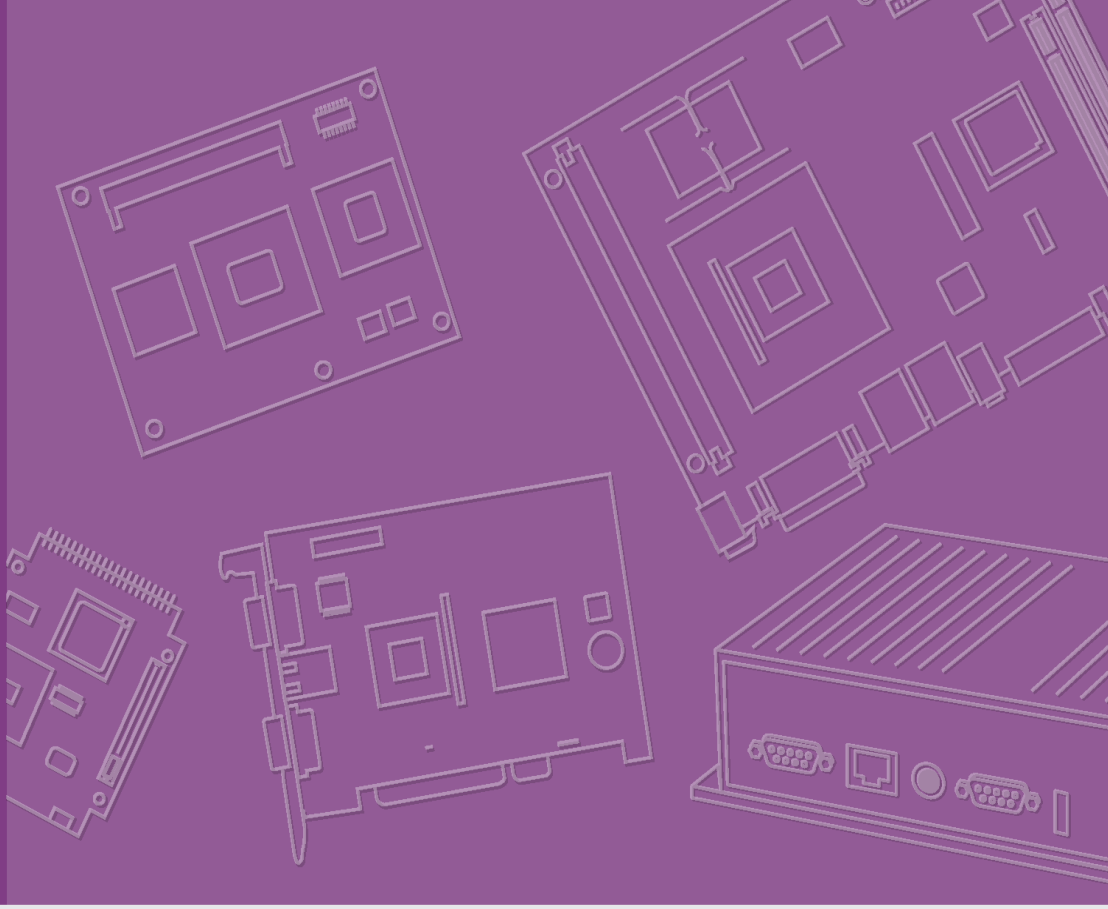


User Manual

SOM-6765

Trusted ePlatform Services

ADVANTECH

Copyright

The documentation and the software included with this product are copyrighted 2010 by Advantech Co., Ltd. All rights are reserved. Advantech Co., Ltd. reserves the right to make improvements in the products described in this manual at any time without notice.

No part of this manual may be reproduced, copied, translated or transmitted in any form or by any means without the prior written permission of Advantech Co., Ltd. Information provided in this manual is intended to be accurate and reliable. However, Advantech Co., Ltd. assumes no responsibility for its use, nor for any infringements of the rights of third parties, which may result from its use.

Acknowledgements

AMI is a trademark of American Megatrends Inc.

VIA is a trademark of VIA Technologies, Inc.

IBM, PC/AT, PS/2 and VGA are trademarks of International Business Machines Corporation.

Intel and Pentium are trademarks of Intel Corporation.

Microsoft Windows® is a registered trademark of Microsoft Corp.

RTL is a trademark of Realtek Semi-Conductor Co., Ltd.

ESS is a trademark of ESS Technology, Inc.

UMC is a trademark of United Microelectronics Corporation.

SMI is a trademark of Silicon Motion, Inc.

Creative is a trademark of Creative Technology LTD.

CHRONTEL is a trademark of Chrontel Inc.

All other product names or trademarks are properties of their respective owners.

Part No. 2006676500 Edition 1

Printed in China Feb. 2012

Product Warranty (2 years)

Advantech warrants to you, the original purchaser, that each of its products will be free from defects in materials and workmanship for two years from the date of purchase.

This warranty does not apply to any products which have been repaired or altered by persons other than repair personnel authorized by Advantech, or which have been subject to misuse, abuse, accident or improper installation. Advantech assumes no liability under the terms of this warranty as a consequence of such events.

Because of Advantech's high quality-control standards and rigorous testing, most of our customers never need to use our repair service. If an Advantech product is defective, it will be repaired or replaced at no charge during the warranty period. For out-of-warranty repairs, you will be billed according to the cost of replacement materials, service time and freight. Please consult your dealer for more details.

If you think you have a defective product, follow these steps:

1. Collect all the information about the problem encountered. (For example, CPU speed, Advantech products used, other hardware and software used, etc.) Note anything abnormal and list any onscreen messages you get when the problem occurs.
2. Call your dealer and describe the problem. Please have your manual, product, and any helpful information readily available.
3. If your product is diagnosed as defective, obtain an RMA (return merchandize authorization) number from your dealer. This allows us to process your return more quickly.
4. Carefully pack the defective product, a fully-completed Repair and Replacement Order Card and a photocopy proof of purchase date (such as your sales receipt) in a shippable container. A product returned without proof of the purchase date is not eligible for warranty service.
5. Write the RMA number visibly on the outside of the package and ship it prepaid to your dealer.

Technical Support and Assistance

1. Visit the Advantech web site at www.advantech.com/support where you can find the latest information about the product.
2. Contact your distributor, sales representative, or Advantech's customer service center for technical support if you need additional assistance. Please have the following information ready before you call:
   - Product name and serial number
   - Description of your peripheral attachments
   - Description of your software (operating system, version, application software, etc.)
   - A complete description of the problem
   - The exact wording of any error messages

Safety Instructions

1. Read these safety instructions carefully.
2. Keep this User Manual for later reference.
3. Disconnect this equipment from any AC outlet before cleaning. Use a damp cloth. Do not use liquid or spray detergents for cleaning.
4. For plug-in equipment, the power outlet socket must be located near the equipment and must be easily accessible.
5. Keep this equipment away from humidity.
6. Put this equipment on a reliable surface during installation. Dropping it or letting it fall may cause damage.
7. The openings on the enclosure are for air convection. Protect the equipment from overheating. DO NOT COVER THE OPENINGS.
8. Make sure the voltage of the power source is correct before connecting the equipment to the power outlet.
9. Position the power cord so that people cannot step on it. Do not place anything over the power cord.
10. All cautions and warnings on the equipment should be noted.
11. If the equipment is not used for a long time, disconnect it from the power source to avoid damage by transient overvoltage.
12. Never pour any liquid into an opening. This may cause fire or electrical shock.
13. Never open the equipment. For safety reasons, the equipment should be opened only by qualified service personnel.
14. If one of the following situations arises, get the equipment checked by service personnel:
    - The power cord or plug is damaged.
    - Liquid has penetrated into the equipment.
    - The equipment has been exposed to moisture.
    - The equipment does not work well, or you cannot get it to work according to the user's manual.
    - The equipment has been dropped and damaged.
    - The equipment has obvious signs of breakage.

Safety Precaution - Static Electricity

Follow these simple precautions to protect yourself from harm and the products from damage.

- To avoid electrical shock, always disconnect the power from your PC chassis before you work on it. Don't touch any components on the CPU card or other cards while the PC is on.
- Disconnect power before making any configuration changes. The sudden rush of power as you connect a jumper or install a card may damage sensitive electronic components.

Contents

Chapter 1 General Information 1

1.1 Introduction 2
1.2 Specifications 2
1.2.1 Standard System On Module functions 2
1.2.2 VGA/flat panel Interface 3
1.2.3 Audio function 3
1.2.4 Ethernet 3
1.2.5 Mechanical and environmental 3

Chapter 2 Mechanical Information 5

2.1 Connectors 6
2.1.1 Board Connector 6
2.1.2 Connector List 6
Table 2.1: Fan Connector 6
2.2 Mechanical Drawing 7
2.2.1 Connector Location 7
Figure 2.1 Board Layout (component side) 7
Figure 2.2 Board Layout (Solder side) 7
2.2.2 Board Dimension 8
Figure 2.3 Board Dimension (Component side) 8
Figure 2.4 Board Dimension (Solder side) 8

Chapter 3 BIOS Setup Information 9

Figure 3.1 Setup program initial screen 10
3.1 Entering Setup 10
3.2 Main Setup 11
Figure 3.2 Main setup screen 11
3.2.1 System time / System date 11
3.3 Advanced BIOS Features Setup 12
Figure 3.3 Advanced BIOS features setup screen 12
3.3.1 Advantech Bios Update V1.3 13
Figure 3.4 Advantech Bios Update V1.3 13
3.3.2 ACPI Settings 13
Figure 3.5 ACPI Setting 13
3.3.3 TPM Configuration 14
Figure 3.6 TPM Configuration 14
3.3.4 CPU Configuration 14
Figure 3.7 Super I/O Configuration 14
3.3.5 SATA Configuration 15
Figure 3.8 SATA Configuration 15
3.3.6 Intel Fast Flash Standy 16
Figure 3.9 Intel Fast Flash Standy 16
3.3.7 USB Configuration 16
Figure 3.10 USB Configuration 16
3.3.8 Embedded Controller Configuration 17
Figure 3.11 Embedded Controller Configuration 17
3.3.9 AOAC Configuration 18
Figure 3.12 AOAC Configuration 18
3.3.10 SuperIO Configuration 18
Figure 3.13 SuperIO Configuration 18
3.3.11 Serial Port Console Redirection 19

Figure 3.14 Serial Port Console Redirection 19
Figure 3.15 Console Redirection Settings 20
Figure 3.16 Console Redirection Settings 21
3.3.12 PPM Configuration 22
Figure 3.17 PPM Configuration 22
3.4 Chipset 22
Figure 3.18 Chipset Setup 22
3.4.1 Intel IGD Configuration 23
Figure 3.19 Intel IGD Configuration 23
Figure 3.20 Intel IGD Configuration 23
Figure 3.21 South Bridge 24
Figure 3.22 TPT Devices 25
Figure 3.23 PCI Express Root Port 0 26
Figure 3.24 PCI Express Root Port 0 27
3.5 Boot Settings 28
Figure 3.25 Boot Setup Utility 28
3.6 Security Setup 29
Figure 3.26 Security Setup 29
3.7 Save & Exit 29
Figure 3.27 Save & Exit 29
3.7.1 Save Changes and Exit 30
3.7.2 Discard Changes and Exit 30
3.7.3 Save Changes and Reset 30
3.7.4 Discard Changes and Reset 30
3.7.5 Save Changes 30
3.7.6 Discard Changes 30
3.7.7 Restore Defaults 30
3.7.8 Save User Defaults 30
3.7.9 Restore User Defaults 30

Chapter 4 S/W Introduction & Installation 31

4.1 S/W Introduction 32
4.2 Driver Installation 32
4.2.1 Windows OS 32
4.2.2 Other OS 32
4.2.3 Step 2- Install Intel INF Update Driver for Windows XP 32
4.2.4 Step 3- Install Intel Graphic Driver for Windows XP 32
4.2.5 Step 4- Install Audio Driver for Windows XP 32
4.2.6 Step 5- Install Intel Ethernet Driver for Windows XP 32

Appendix A Watchdog Timer 33

A.1 Programming the Watchdog Timer 34

Appendix B Programming GPIO 35

B.1 GPIO Mapping 36

Appendix C System Assignments 37

C.1 System I/O Port 38
Table C.1: System I/O Ports 38
C.2 DMA Channel Assignments 40
Table C.2: DMA Channel Assignments 40
C.3 Interrupt Assignments 40
Table C.3: Interrupt Assignment 40

C.4 1st MB Memory Map 41
Table C.4: 1st MB Memory Map 41

Chapter 1

General Information

This chapter gives background information on the SOM-6765 CPU System on Module.

Sections include:

- Introduction
- Specifications

1.1 Introduction

SOM-6765 is an embedded COM-Express Compact COM.0 R2.0 Type 2 CPU module that fully complies with the PCI Industrial Computer Manufactures PICMG COM Express standard. The new CPU module supports Intel N2600 and D2700 processors with NM10 chipset which supports Intel Embedded GFX Core, MPEG2 Decode in HW, PCI Express and SATA interfaces. In a basic form factor of 95mm x 95mm, the SOM-6765 provides a scalable high performance and easy to integrate solution for customers' applications by utilizing a plug-in CPU module on an application-specific customer solution board. The SOM-6765 with advanced I/O capacity incorporates serial differential signaling technologies such as PCI Express, Serial ATA, USB 2.0, LVDS, and HD Audio interfaces. SOM-6765 offers customers more choices for their own applications needing higher computing speeds while maintaining a compact form factor.

SOM-6765 complies with the "Green Function" standard and supports Doze, Standby and Suspend modes. The small size (95 mm x 95 mm) and use of one high capacity connector based on the proven COM-Express Compact form factor, allow the modules to be easily and securely mounted onto a customized solution board or our standard SOM-DB5700 development board.

The SOM-6765 is a highly integrated multimedia COM module that combines audio, video, and network functions. It provides excellent processing capabilities via Intel N2600 and D2700 processors, single channel LVDS interface for middle size TFT LCD display, DDR3 memory up to 2 GB (N2600) or 4GB (D2700), high definition audio interface (HD Audio).

1.2 Specifications

1.2.1 Standard System On Module functions

- **CPU:** Onboard Intel® Atom N2600 processor
  Onboard Intel® Atom D2700 processor
  (Detail CPU support information please contact your sales representative)
- **BIOS:** AMI EFI 2MB Flash
- **Chipset:** Intel® NM10 Chipset
- **Cache memory:** Intel® Atom N2600 processor integrated 512KB L2 cache
  Intel® Atom D2700 processor integrated 512KB L2 cache
- **System memory:** 204-pin SODIMM supports 800MHz (N2600)/ 1066MHz (D2700) DDR3 memory only
  Up to 2GB memory at Intel® Atom N2600 processor
  Up to 4GB memory at Intel® Atom D2700 processor
- **Power management:** Supports power saving modes including Normal / Standby / Suspend modes. ACPI 2.0 compliant
- **SATA interface:** 2 SATAII Channels
- **Watchdog timer:** 256 levels timer interval, from 0 to 255 sec or min setup by software, jumper less selection, generates system reset
- **USB interface:** Supports 8 USB 2.0 ports
- **Expansion Interface:** Supports LPC, 2 PCIe x1 default setting (can be 1 PCIe x4 or 4 PCIe x1 option), 4 PCI masters

1.2.2 VGA/flat panel Interface

- **Chipset:** Intel NM10, DX9, MPEG2 Decode controller
- **Display type:** Dual display supports of CRT and LVDS.
  Supports 18-bit single channel LVDS interface for N2600
  18&24-bit single channel LVDS interface for D2700
- **Display mode:** CRT Mode: Support up to 1920 x 1200 (N2600/D2700)
  LVDS Mode: Support up to 1366 x 768 (N2600)
  1440 x 900 (D2700)

1.2.3 Audio function

- **Audio interface:** Intel high definition audio interface

1.2.4 Ethernet

- **Chipset:**

  1000Mbps: Intel 82583V Gigabit Ethernet. Base on IEEE 10BASE-T, 100BASE-TX and 1000BASE-T standard.

1.2.5 Mechanical and environmental

- **Dimensions:** COM-Micro form-factor, 95 mm x 95 mm (3.74" x 3.74")
- **Power supply voltage:** +12 V power only
  (+5VSB is need for ACPI and ATX power)
- **Power requirement:**

  SOM-6765N (2GB DDRIII 1066)
  +12 V @ 0.5 A
  SOM-6765D (4GB DDRIII 1066)
  +12 V @ 0.63 A
- **Operating temperature:** 0 ~ 60°C (32 ~ 140°F)
- **Operating humidity:** 0% ~ 90% relative humidity, non-condensing
- **Weight:** 0.103 Kg (weight of total package)

Chapter 2

Mechanical Information

This chapter gives mechanical and connector information on the SOM-6765 CPU System on Module.

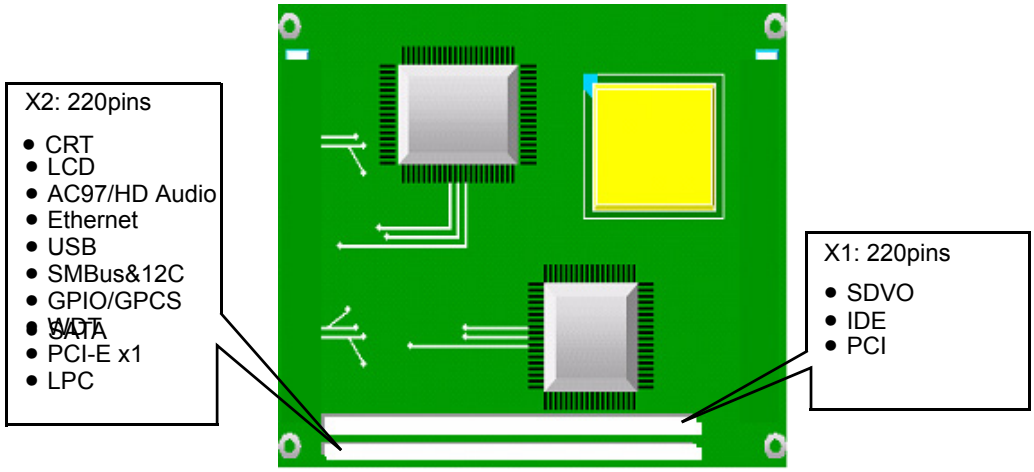
Sections include:

- Connector Information
- Mechanical Drawing

2.1 Connectors

2.1.1 Board Connector

There are two connectors at the rear side of SOM-6765 for connecting to carrier board.



- **Pin Assignments for X2 connector**

  Please refer to Advantech_COM_Express_Design Guide, Chapter 2.

  You can download Advantech_COM_Express_Design Guide from http://com.advantech.com/

2.1.2 Connector List

Table 2.1: Fan Connector

FAN1	**Fan**
Description	Wafer 2.0mm 3P 90D(M)DIP 2001-WR-03-LF W/Lock
Pin	**Pin Name**
1	Fan Tach-Input
2	Fan Out
3	GND

2.2 Mechanical Drawing

2.2.1 Connector Location

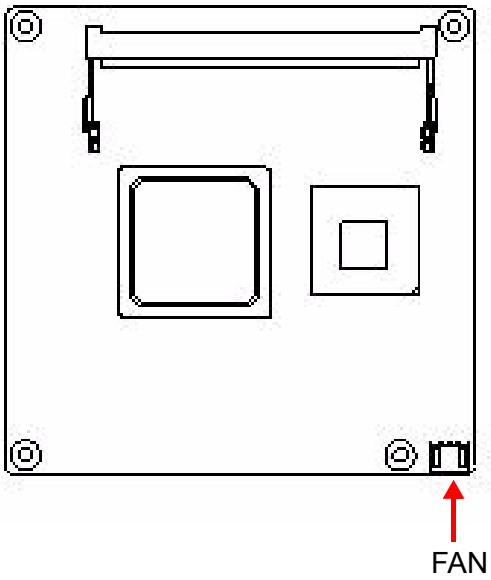


Figure 2.1 Board Layout (component side)

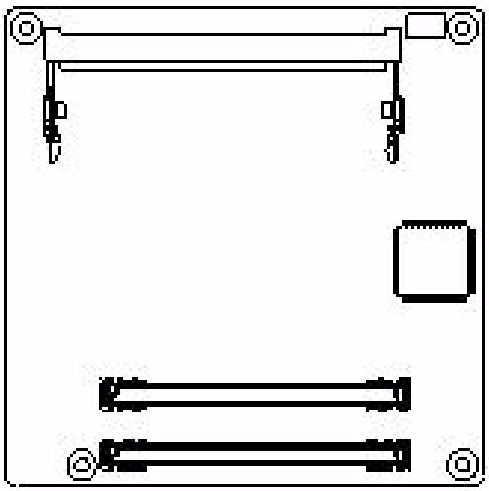


Figure 2.2 Board Layout (Solder side)

2.2.2 Board Dimension

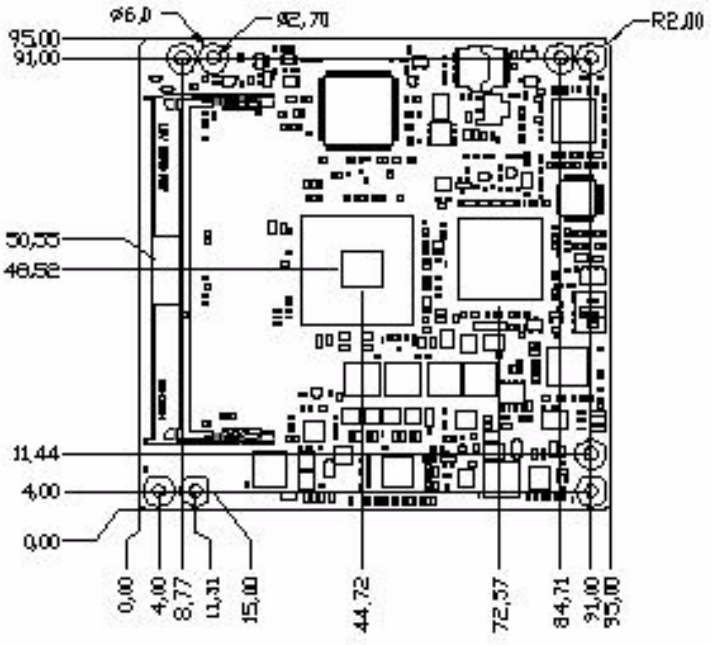


Figure 2.3 Board Dimension (Component side)

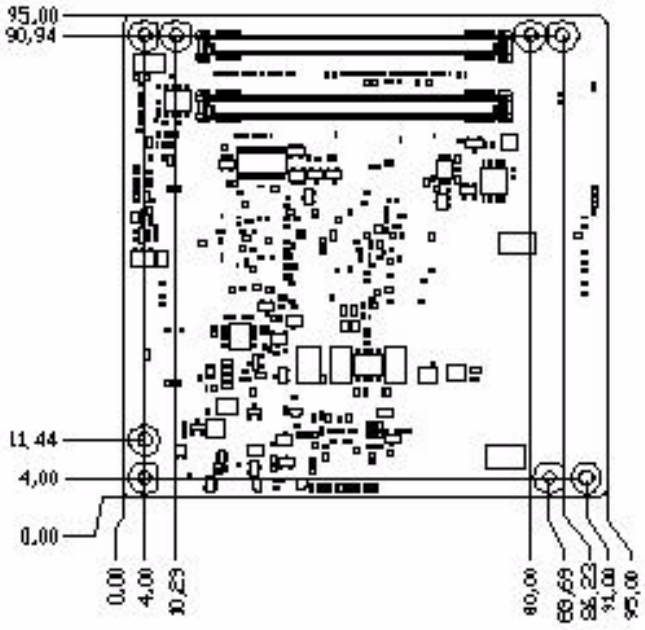


Figure 2.4 Board Dimension (Solder side)

Chapter 3

BIOS Setup Information

This chapter gives basic BIOS upgrade and Setup information on the SOM-7562 CPU System on Module.

Sections include:

- Safety Precautions
- BIOS Update
- Basic BIOS Setup

AMIBIOS has been integrated into many motherboards for over a decade. With the AMIBIOS Setup program, users can modify BIOS settings and control the various system features. This chapter describes the basic navigation of the SOM-6765 BIOS setup screens.

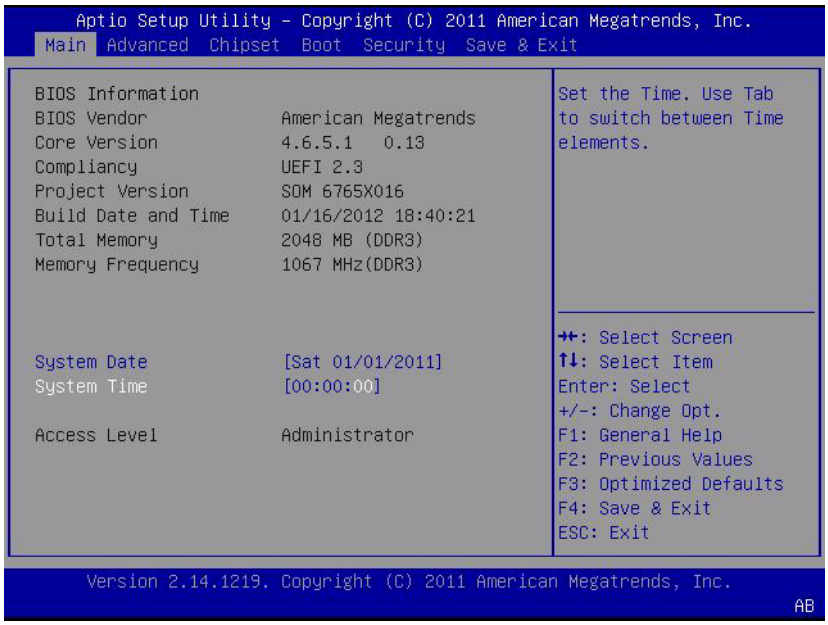

Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
Main Advanced Chipset Boot Security Save & Exit
BIOS Information
BIOS Vendor American Megatrends
Core Version 4.6.5.1 0.13
Compliancy UEFI 2.3
Project Version SOM 6765X016
Build Date and Time 01/16/2012 18:40:21
Total Memory 2048 MB (DDR3)
Memory Frequency 1067 MHz(DDR3)
System Date [Sat 01/01/2011]
System Time [00:00:00]
Access Level Administrator
Set the Time. Use Tab to switch between Time elements.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.
AB

Figure 3.1 Setup program initial screen

AMI's BIOS ROM has a built-in Setup program that allows users to modify the basic system configuration. This information is stored in flash ROM so it retains the Setup information when the power is turned off.

3.1 Entering Setup

Turn on the computer and then press <F2> or <DEL> to enter Setup menu.

3.2 Main Setup

When users first enter the BIOS Setup Utility, users will enter the Main setup screen. Users can always return to the Main setup screen by selecting the Main tab. There are two Main Setup options. They are described in this section. The Main BIOS Setup screen is shown below.

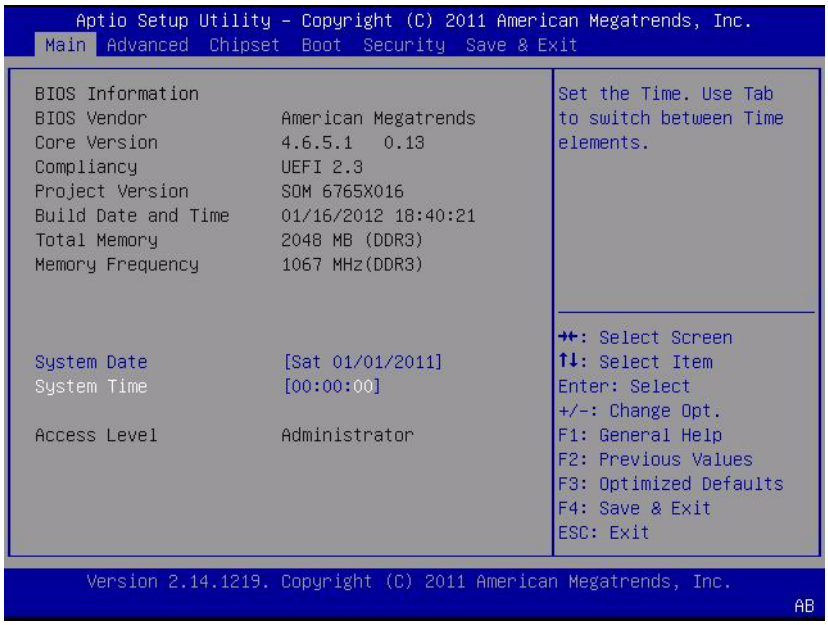

Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
Main Advanced Chipset Boot Security Save & Exit
BIOS Information
BIOS Vendor American Megatrends
Core Version 4.6.5.1 0.13
Compliancy UEFI 2.3
Project Version SOM 6765X016
Build Date and Time 01/16/2012 18:40:21
Total Memory 2048 MB (DDR3)
Memory Frequency 1067 MHz(DDR3)
System Date [Sat 01/01/2011]
System Time [00:00:00]
Access Level Administrator
Set the Time. Use Tab to switch between Time elements.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.
AB

Figure 3.2 Main setup screen

The Main BIOS setup screen has two main frames. The left frame displays all the options that can be configured. Grayed-out options cannot be configured; options in blue can. The right frame displays the key legend.

Above the key legend is an area reserved for a text message. When an option is selected in the left frame, it is highlighted in white. Often a text message will accompany it.

3.2.1 System time / System date

Use this option to change the system time and date. Highlight System Time or System Date using the <Arrow> keys. Enter new values through the keyboard. Press the <Tab> key or the <Arrow> keys to move between fields. The date must be entered in MM/DD/YY format. The time must be entered in HH:MM:SS format.

3.3 Advanced BIOS Features Setup

Select the Advanced tab from the SOM-6765 setup screen to enter the Advanced BIOS Setup screen. Users can select any item in the left frame of the screen, such as CPU Configuration, to go to the sub menu for that item. Users can display an Advanced BIOS Setup option by highlighting it using the <Arrow> keys. All Advanced BIOS Setup options are described in this section. The Advanced BIOS Setup screens are shown below. The sub menus are described on the following pages.

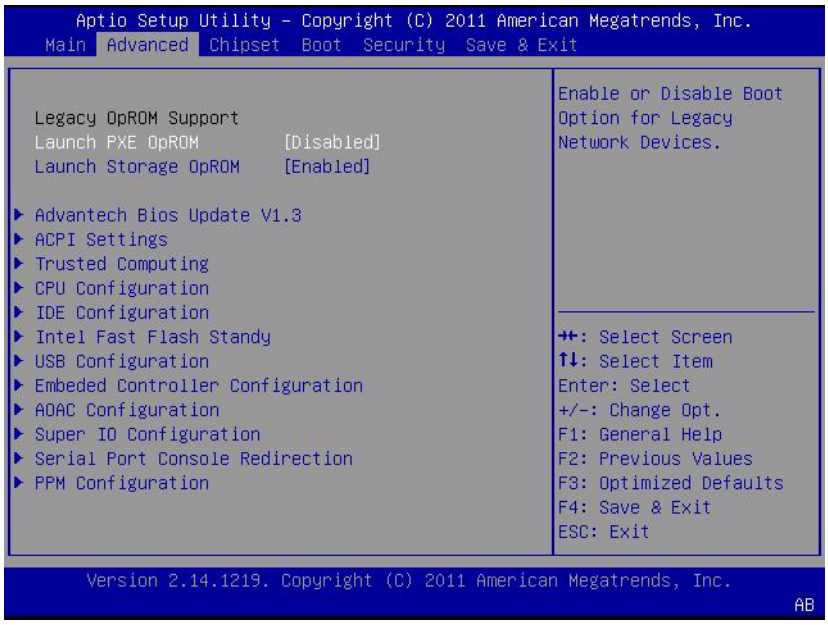


Figure 3.3 Advanced BIOS features setup screen

Launch PXE OpROM

This item allows users to enable or disable launch PXE OpROM if available.

Launch Storage OpROM

This item allows users to enable or disable launch storage OpROM if available.

3.3.1 Advantech Bios Update V1.3

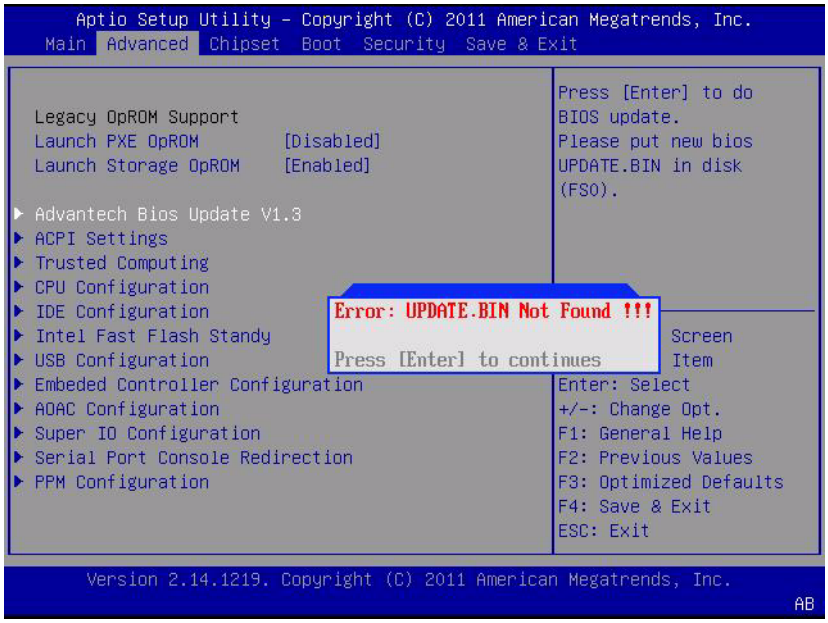


Figure 3.4 Advantech Bios Update V1.3

Advantech Bios Update V1.3

Press[Enter] to do BIOS update.

Please put new bios UPDATE.BIN in disk(FS0).

3.3.2 ACPI Settings

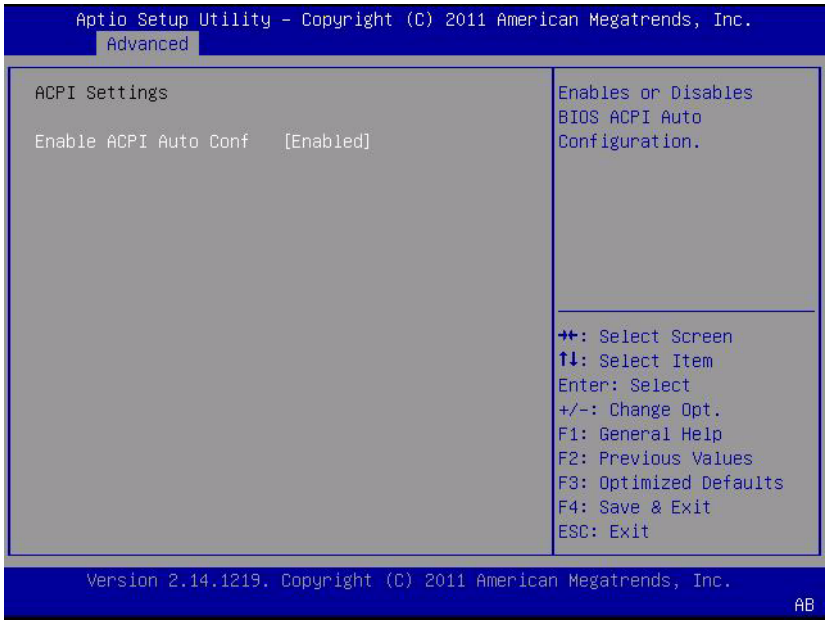


Figure 3.5 ACPI Setting

Enable ACPI Auto Configuration

This item allows users to enable or disable BIOS ACPI auto configuration.

Enable Hibernation

This item allows users to enable or disable hibernation.

ACPI Sleep State

This item allows users to set the ACPI sleep state.

Lock Legacy Resources

This item allows users to lock legacy devices°Ø resources.

S3 Video Repost

Enable or Disable S3 Video Repost.

3.3.3 TPM Configuration

Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
Advanced
Configuration
TPM SUPPORT [Enable]
Current Status Information
NO Security Device
Enables or Disables BIOS support for security device. O.S. will not show Security Device. TCG EFI protocol and INT1A interface will not be available.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.
AB

Figure 3.6 TPM Configuration

TPM Support

Disable/Enable TPM if available.

3.3.4 CPU Configuration

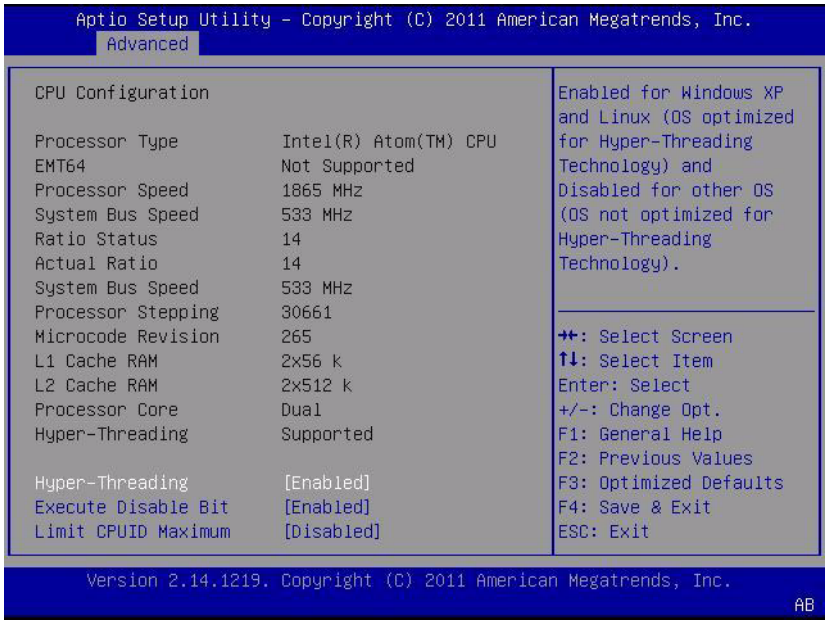

Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
Advanced
CPU Configuration
Processor Type Intel(R) Atom(TM) CPU
EM64T Not Supported
Processor Speed 1865 MHz
System Bus Speed 533 MHz
Ratio Status 14
Actual Ratio 14
System Bus Speed 533 MHz
Processor Stepping 30661
Microcode Revision 265
L1 Cache RAM 2x56 k
L2 Cache RAM 2x512 k
Processor Core Dual
Hyper-Threading Supported
Hyper-Threading [Enabled]
Execute Disable Bit [Enabled]
Limit CPUID Maximum [Disabled]
Enabled for Windows XP and Linux (OS optimized for Hyper-Threading Technology) and Disabled for other OS (OS not optimized for Hyper-Threading Technology).
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.
AB

Figure 3.7 Super I/O Configuration

Hyper Threading Technology

This item allows users to enable or disable Intel Hyper Threading technology.

Limit CPUID Maximum

This item allows users to limit the maximum value of CPUID.

Execute Disable Bit

This item allows users to enable or disable the No-Execution page Portection technology.

3.3.5 SATA Configuration

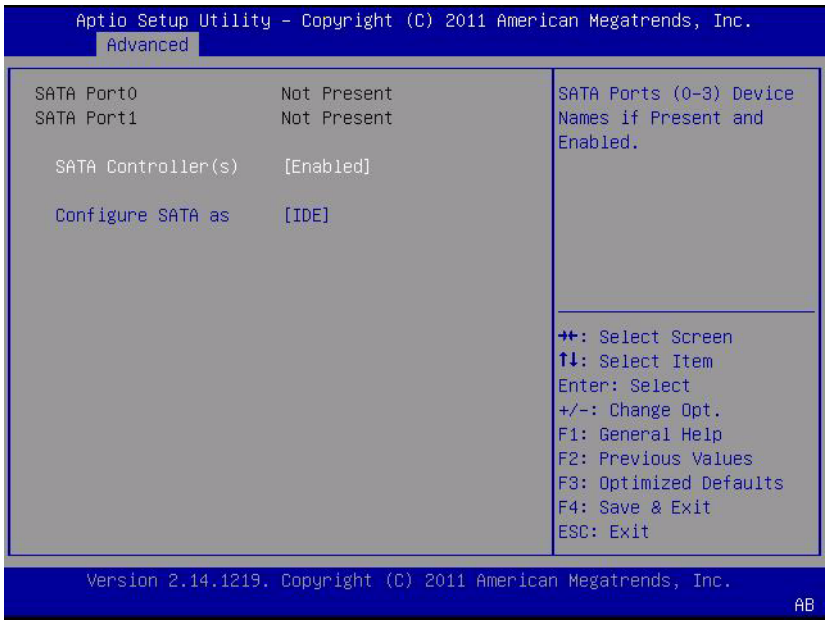


Figure 3.8 SATA Configuration

SATA Controller(s)

This item allows users to enable or disable the SATA controller(s).

SATA Mode Selection

This item allows users to select mode of SATA controller(s).

3.3.6 Intel Fast Flash Standy

Figure 3.9 Intel Fast Flash Standy

iFFS Support

Enable or disable IFFS function.

3.3.7 USB Configuration

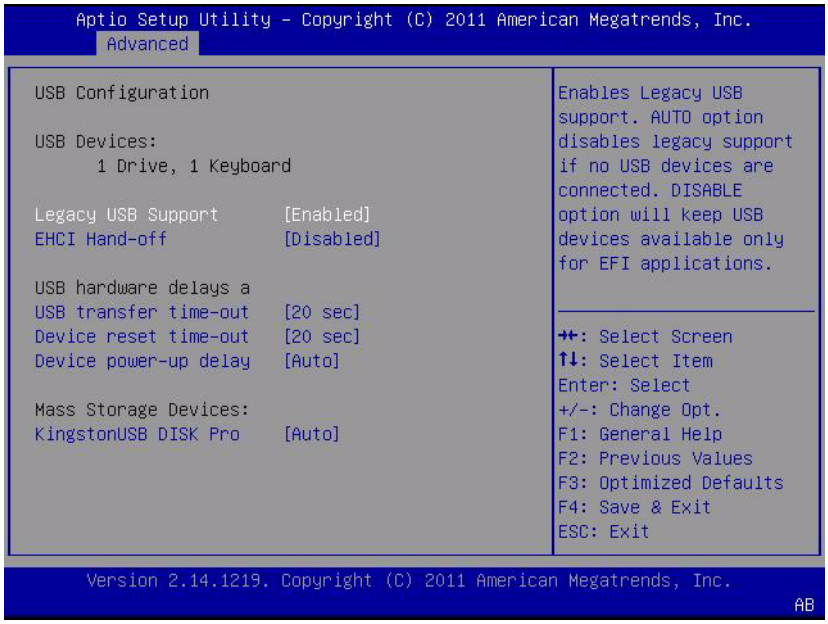

Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
Advanced
USB Configuration
USB Devices:
1 Drive, 1 Keyboard
Legacy USB Support [Enabled]
EHCI Hand-off [Disabled]
USB hardware delays a
USB transfer time-out [20 sec]
Device reset time-out [20 sec]
Device power-up delay [Auto]
Mass Storage Devices:
KingstonUSB DISK Pro [Auto]
Enables Legacy USB support. AUTO option disables legacy support if no USB devices are connected. DISABLE option will keep USB devices available only for EFI applications.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.
AB

Figure 3.10 USB Configuration

Legacy USB Support

Enable the support for legacy USB. Auto option disables legacy support if no USB devices are connected.

EHCI Hand-Off

This is a workaround for the OS without EHCI hand-off support. The EHCI ownership change should claim by EHCI driver.

USB transfer time-out

Set the time-out value for Control, Bulk, and Interrupt transfers.

Device reset time-out

Set USB mass storage device Start Unit command time-out value.

Device power-up delay

Set the maximum time of the device will take before it properly reports itself to the Host Controller. 'Auto' uses default value: for a Root port it is 100 ms, for a Hub port the delay is taken from Hub descriptor.

3.3.8 Embedded Controller Configuration

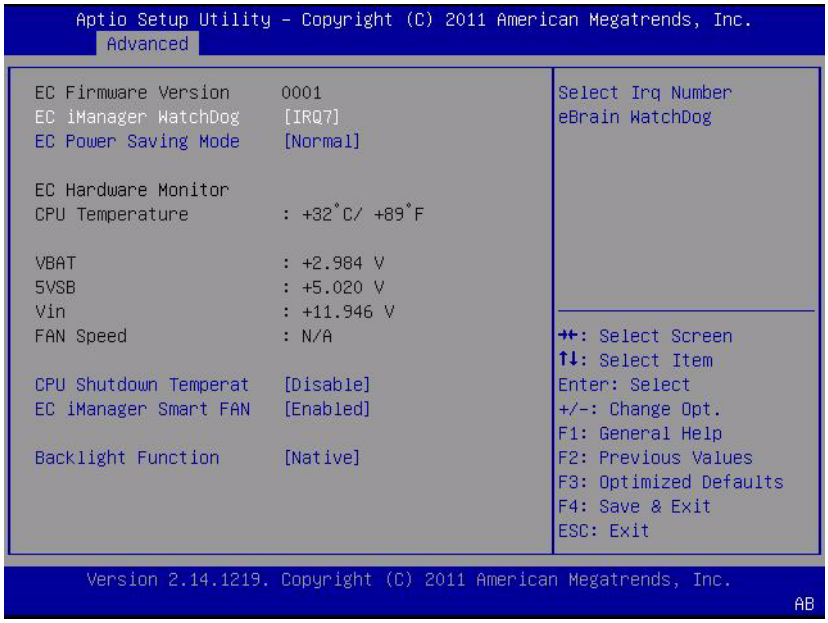


Figure 3.11 Embedded Controller Configuration

EC iManager WatchDog IRQ

This item allows users to set the irq number of EC watchdog.

EC Power Saving Mode

This item allows users to set board°Øs power saving mode when off.

CPU Shutdown Temperature

This item allows users to set the value of CPU shutdown temperature.

EC iManager Smart FAN

This item allows users to enable or disable smart FAN feature.

Backlight Function

This item allows users to set backlight enable polarity.

3.3.9 AOAC Configuration

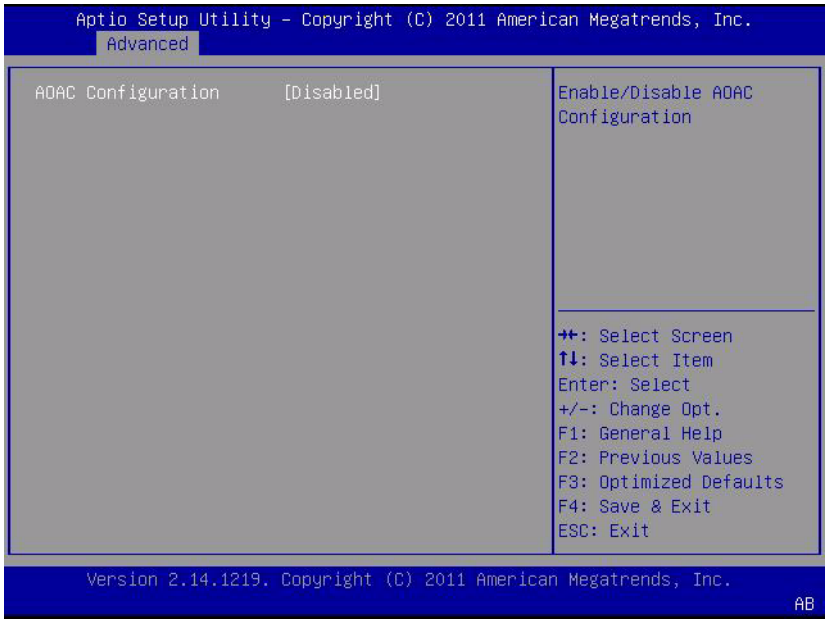


Figure 3.12 AOAC Configuration

AOAC Configuration

Enable/Disable AOAC Configuration.

3.3.10 SuperIO Configuration

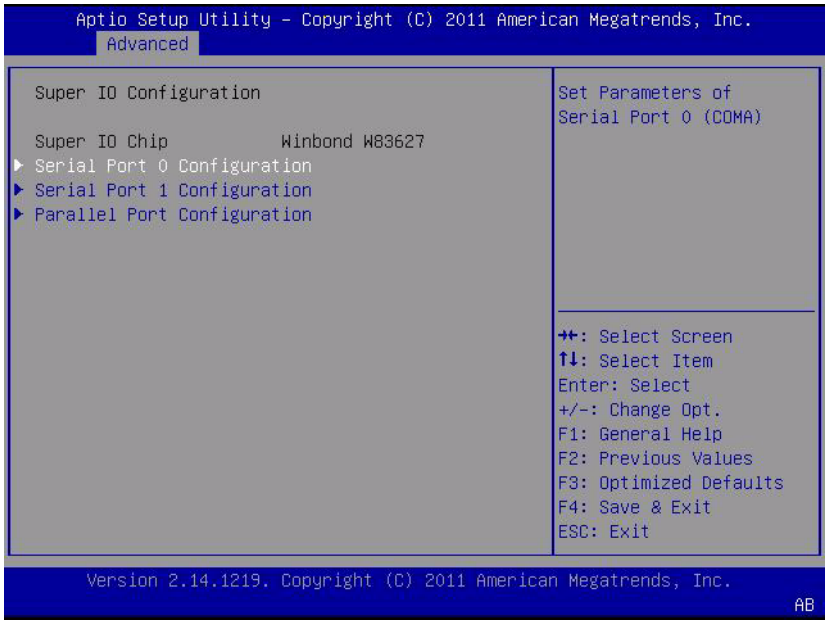


Figure 3.13 SuperIO Configuration

Serial Port 0 Configuration

This item allows users to configure serial port 0.

Serial Port 1 Configuration

This item allows users to configure serial port 1.

Parallel Port Configuration

This item allows users to configure parallel port.

3.3.11 Serial Port Console Redirection

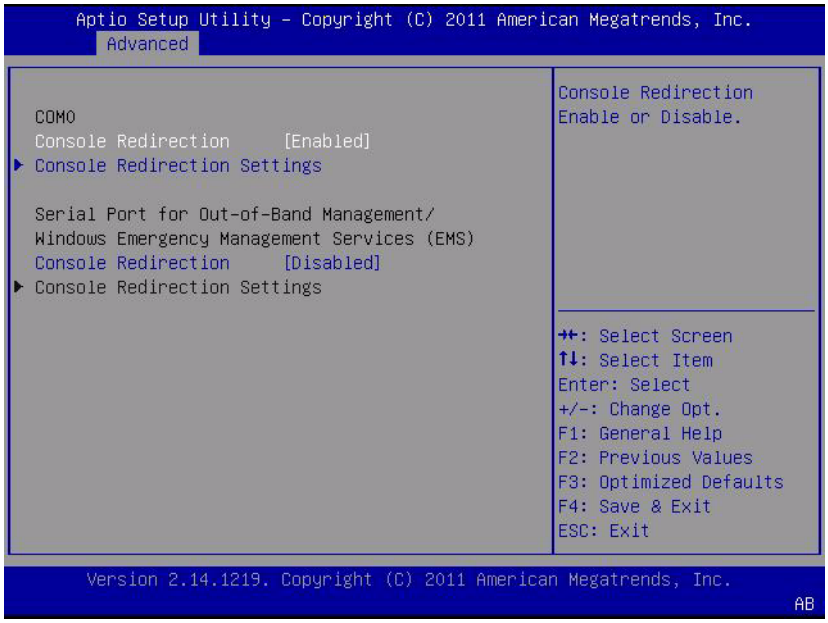


Figure 3.14 Serial Port Console Redirection

Console Redirection(COM0)

Console Redirection Enable or Disable.

Console Redirection Settings

The settings specify how the host computer and the computer and the remote computer (which the user is using) will exchange data. Both computers should have the same or compatible settings.

Console Redirection(EMS)

Console Redirection Enable or Disable.

Console Redirection Settings

This item allows users to enable or disable console redirection for Microsoft Windows Emergency Management Serivces (EMS).

3.3.11.1 Console Redirection Settings

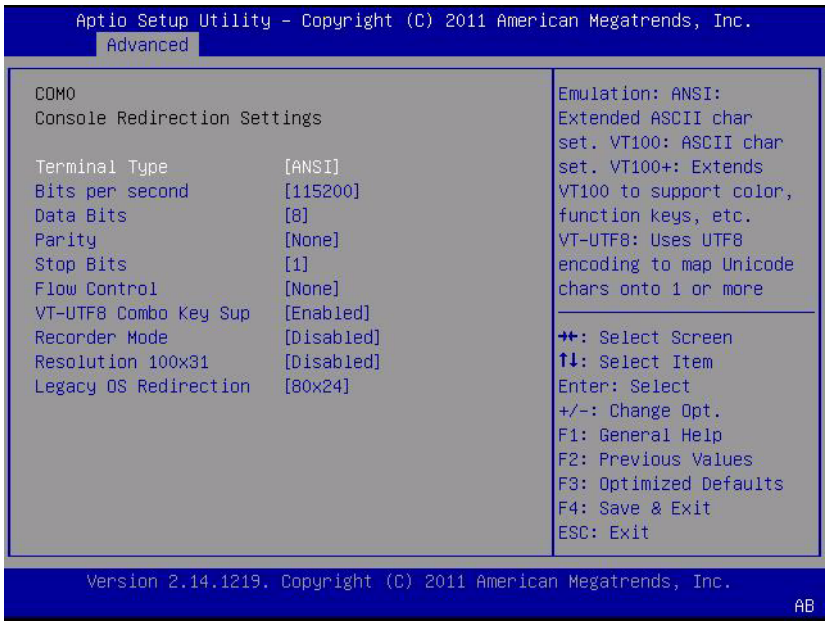

Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
Advanced
COM0
Console Redirection Settings
Terminal Type [ANSI]
Bits per second [115200]
Data Bits [8]
Parity [None]
Stop Bits [1]
Flow Control [None]
VT-UTF8 Combo Key Sup [Enabled]
Recorder Mode [Disabled]
Resolution 100x31 [Disabled]
Legacy OS Redirection [80x24]
Emulation: ANSI: Extended ASCII char set. VT100: ASCII char set. VT100+: Extends VT100 to support color, function keys, etc. VT-UTF8: Uses UTF8 encoding to map Unicode chars onto 1 or more
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.
AB

Figure 3.15 Console Redirection Settings

Terminal Type

Emulation: ANSI: Extended ASCII char set. VT100: ASCII char set. VT100+: Extends VT100 to support color, function keys, etc. VT-UTF8: Uses UTF8 encoding to map Unicode chars onto 1 or more bytes.

Bits per second

Select the serial port transmission speed. The speed must be matched on the other side. Long or noisy lines may require lower speeds.

Data Bits

Data Bits 7 or 8

Parity

A parity bit can be sent with the data bits to detect some transmission errors. Even: parity bit is 0 if the num of 1's in the data bits is even. Odd: parity bit is 0 if num of 1's in the data bits is odd. Mark: parity bit is always 1. Space: Parity bit is always 0. Mark and Space Parity do not allow for error detection. They can be used as an additional data bit.

Stop Bits

Stop bits indicate the end of a serial data packet. (A start bit indicates the beginning). The standard setting is 1 stop bit. Communication with slow devices may require more than 1 stop bit.

Flow Control

Flow control can prevent data loss from buffer overflow. When sending data, if the receiving buffers are full, a 'stop' signal can be sent to stop the data flow. Once the buffers are empty, a 'start' signal can be sent to re-start the flow. Hardware flow control uses two wires to send start/stop signals.

VT-UTF8 Combo Key Support

Enable VT-UTF8 Combination Key Support for ANSI/VT100 terminals

Recorder Mode

With this mode enabled only text will be sent. This is to capture Terminal data.

Resolution 100x31

Enables or disables extended terminal resolution

Legacy OS Redirection

On Legacy OS, the Number of Rows and Columns supported redirection

3.3.11.2 e Redirection Settings

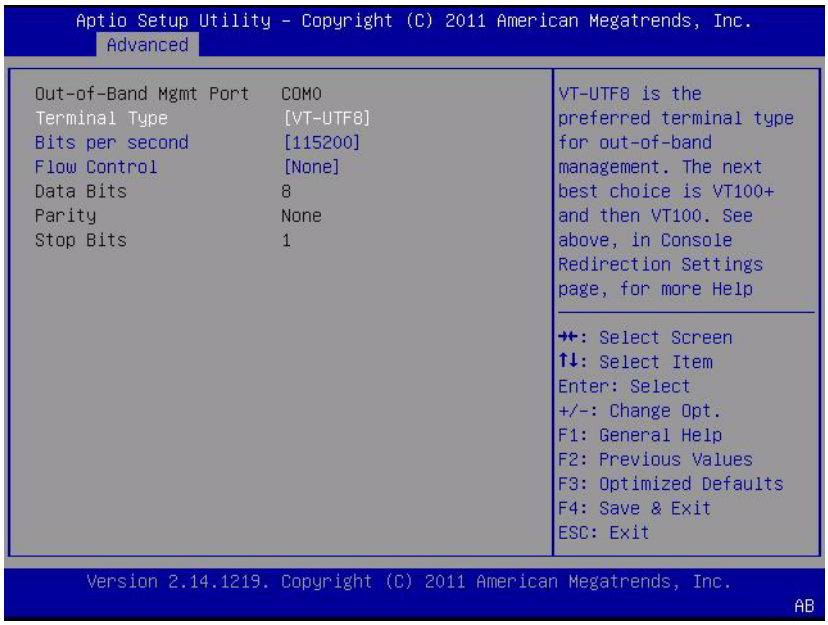

Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
Advanced
Out-of-Band Mgmt Port COM0
Terminal Type [VT-UTF8]
Bits per second [115200]
Flow Control [None]
Data Bits 8
Parity None
Stop Bits 1
VT-UTF8 is the preferred terminal type for out-of-band management. The next best choice is VT100+ and then VT100. See above, in Console Redirection Settings page, for more Help
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.
AB

Figure 3.16 Console Redirection Settings

Terminal Type

VT-UTF8 is the preferred terminal type for out-of-band management. The next best choice is VT100+ and then VT100. See above, in Console Redirection Settings page, for more Help with Terminal Type/Emulation.

Bits per second

Select the serial port transmission speed. The speed must be matched on the other side. Long or noisy lines may require lower speeds.

Flow Control

Flow control can prevent data loss from buffer overflow. When sending data, if the receiving buffers are full, a 'stop' signal can be sent to stop the data flow. Once the buffers are empty, a 'start' signal can be sent to re-start the flow. Hardware flow control uses two wires to send start/stop signals.

3.3.12 PPM Configuration

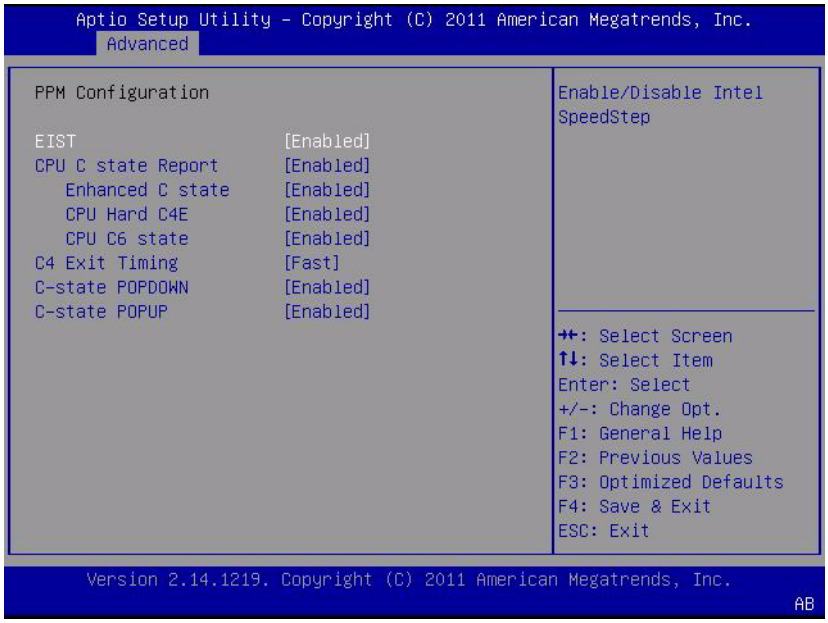


Figure 3.17 PPM Configuration

EIST

CPU runs at its default speed if disabled; CPU speed is controlled by the operating system if enabled.

CPU C3/C6/C7 Report

This item allows users to enable or disable CPU C-state support.

3.4 Chipset

Select the Chipset tab from the SOM-6765 setup screen to enter the Chipset BIOS Setup screen. You can display a Chipset BIOS Setup option by highlighting it using the <Arrow> keys. All Plug and Play BIOS Setup options are described in this section. The Plug and Play BIOS Setup screen is shown below.

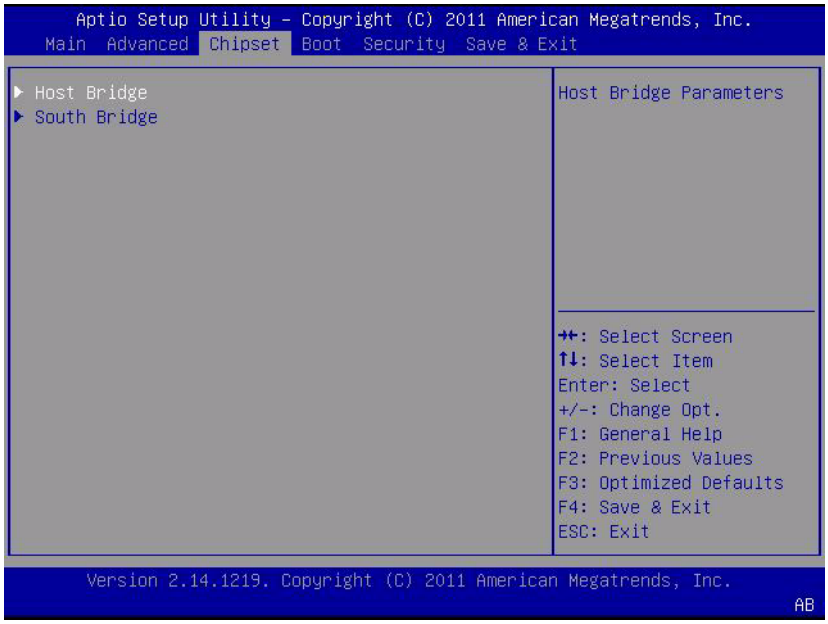


Figure 3.18 Chipset Setup

3.4.1 Intel IGD Configuration

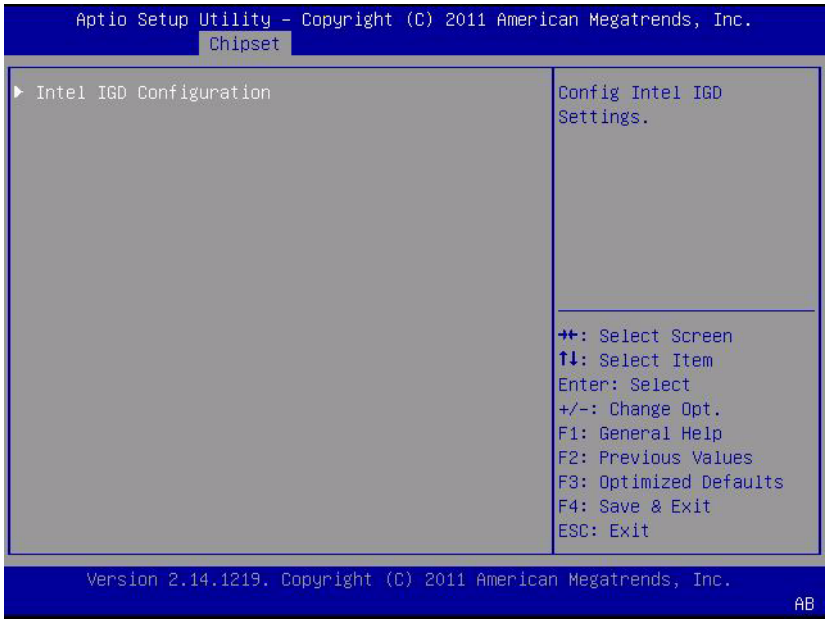


Figure 3.19 Intel IGD Configuration

Intel IGD Configuration

Config Intel IGD Settings.

3.4.1.1 Intel IGD Configuration

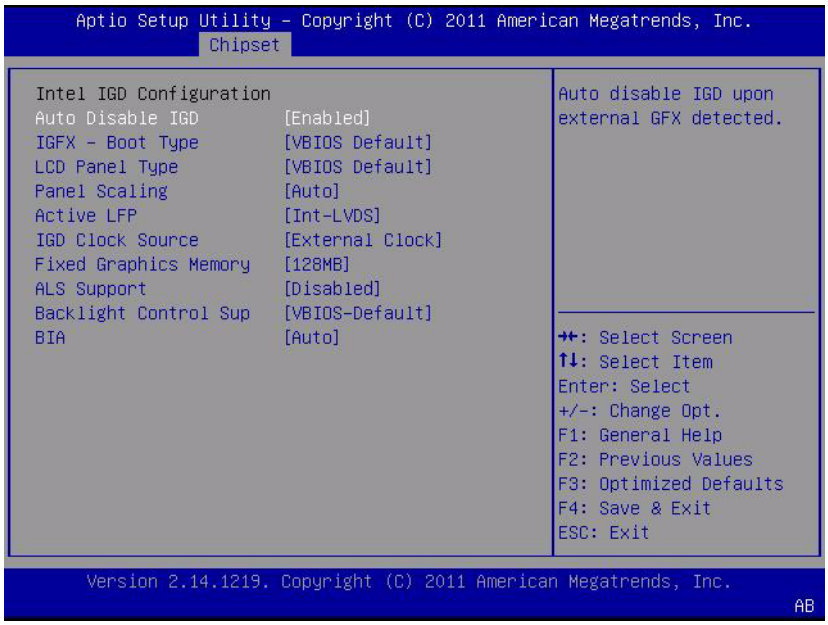


Figure 3.20 Intel IGD Configuration

Auto Disable IGD

Auto disable IGD upon external GFX detected.

IGFX - Boot Type

Select the Video Device which will be activated during POST. This has no effect if external graphics present.

LCD Panel Type

Select LCD panel used by Internal Graphics Device by selecting the appropriate setup item.

Panel Scaling

Select the LCD panel scaling option used by the Internal Graphics Device.

Active LFP

Select the Active LFP Configuration.

No LVDS:VBIOS does not enable LVDS.

Int-LVDS:VBIOS enables LVDS driver by Integrated encoder.

SDVO LVDS:VBIOS enables LVDS driver by SDVO encoder.

eDP Port-A:LFP Driven by Int-DisplayPort encoder from Port-A.

eDP Port-D:LFP Driven by Int-DisplayPort encoder from Port-D(through PCH).

IGD Clock Source

IGD Clock Source selection External/Internal Clock.

Fixed Graphics Memory Size

Configure Fixed Graphics Memory Size

ALS Support

Valid only for ACPI.

Legacy = ALS Support through the IGD INT10 function.

ACPI = ALS support through an ACPI ALS driver.

Backlight Control Support

Backlight Control Configuration

BIA

Auto: GMCH Use VBT Default;

Level n: Enabled with Selected Aggressiveness Level.

3.4.1.2 South Bridge

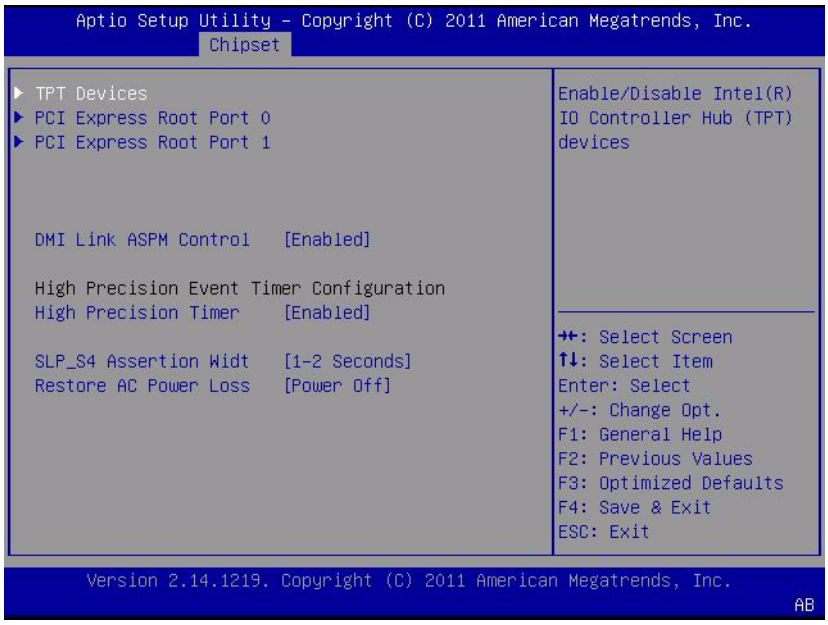

Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
Chipset
TPT Devices
PCI Express Root Port 0
PCI Express Root Port 1
DMI Link ASPM Control [Enabled]
High Precision Event Timer Configuration
High Precision Timer [Enabled]
SLP_S4 Assertion Widt [1-2 Seconds]
Restore AC Power Loss [Power Off]
Enable/Disable Intel(R) IO Controller Hub (TPT) devices
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.
AB

Figure 3.21 South Bridge

TPT Devices

Enable/Disable Intel(R) IO Controller Hub (TPT) devices.

PCI Express Root Port 0

PCI Express Root Port 0 Settings.

PCI Express Root Port 1

PCI Express Root Port 1 Settings.

DMI Link ASPM Control

The control of Active State Power Management on both NB side and SB side of the DMI Link.

High Precision Timer

Enable or Disable the High Precision Event Timer.

SLP_S4 Assertion Widt

Select a minimum assertion width of the SLP_S4# signal

Restore AC Power Loss

Select AC power state when power is re-applied after a power failure.

- TPT Devices

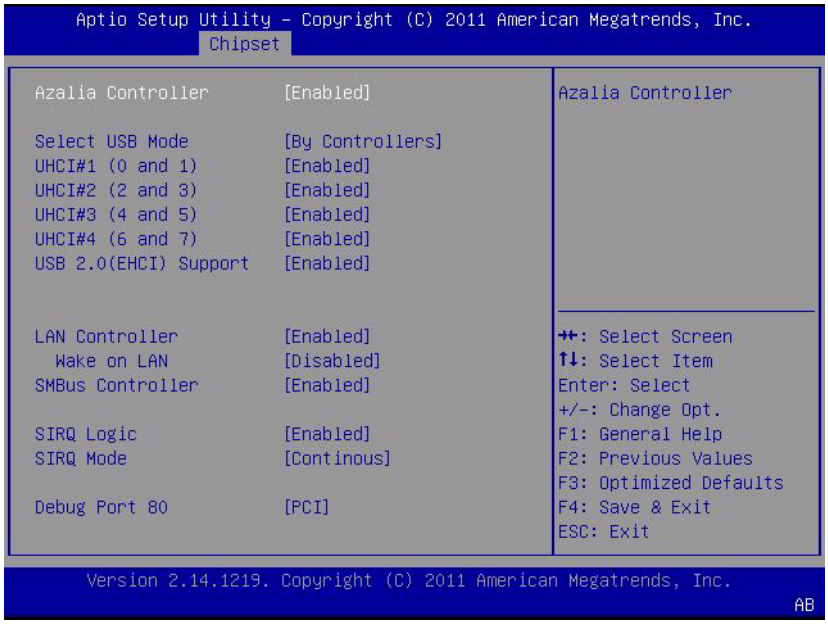


Figure 3.22 TPT Devices

Azalia Controller

Azalia Controller Enable/Disable

Select USB Mode

Select USB mode to control USB ports.

UHCI#1 (0 and 1) / UHCI#2 (2 and 3) / UHCI#3 (4 and 5) / UHCI#4 (6 and 7)

Control the USB UHCI (USB 1.1) functions.\n\nDisable from highest to lowest controller.

USB 2.0(EHCI) Support

Enable or Disable USB 2.0 (EHCI) Support.

LAN Controller

Enable or Disable OnChip NIC Controller.

Wake on LAN

Enable or disable PCIE LAN to wake the system.

SMBus Controller

Enable or Disable OnChip SMBus Controller.

SIRQ Logic

Enable or Disable SIRQ logic.

SIRQ Mode

Set SIRQ mode.

Debug Port 80

Show Debug Port 80 from PCI or LPC

- PCI Express Root Port 0

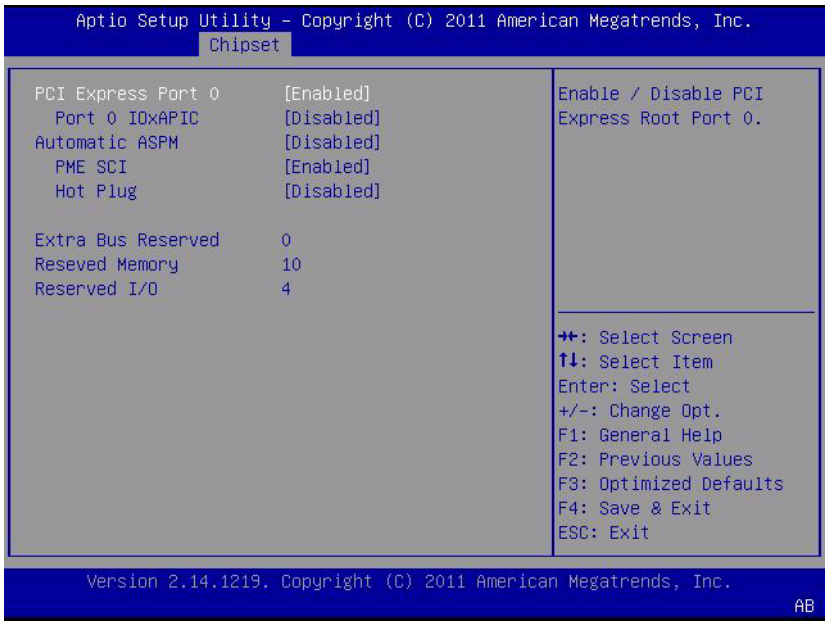


Figure 3.23 PCI Express Root Port 0

PCI Express Port 0

Enable / Disable PCI Express Root Port 0.

Port 0 IOxAPIC

Enable / Disable PCI Express Root Port 0 I/O APIC.

Automatic ASPM

Automatically enable ASPM based on reported capabilities and known issues.

PME SCI

PCI Express PME SCI Enable/Disable.

Hot Plug

PCI Express Hot Plug Enable/Disable.

Extra Bus Reserved

Extra Bus Reserved (0-7) for bridges behind this Root Bridge.

Reseved Memory

Reserved Memory and Prefetchable Memory (1-20MB) Range for this Root Bridge.

Reserved I/O

Reserved I/O (4K/8K/12K/16K/20K) Range for this Root Bridge.

- PCI Express Root Port 1

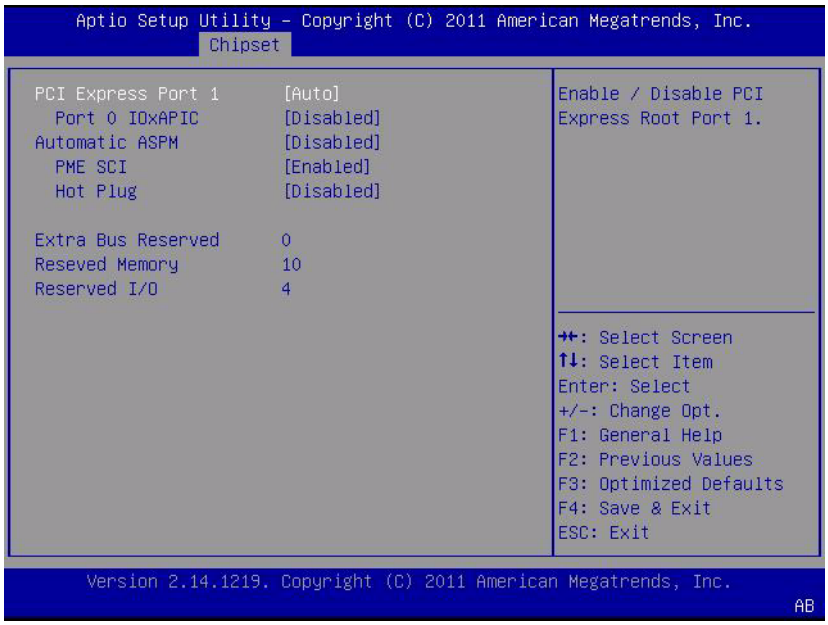


Figure 3.24 PCI Express Root Port 0

PCI Express Port 1

Enable / Disable PCI Express Root Port 1.

Port 0 IOxAPIC

Enable / Disable PCI Express Root Port 0 I/O APIC.

Automatic ASPM

Automatically enable ASPM based on reported capabilities and known issues.

PME SCI

PCI Express PME SCI Enable/Disable.

Hot Plug

PCI Express Hot Plug Enable/Disable.

Extra Bus Reserved

Extra Bus Reserved (0-7) for bridges behind this Root Bridge.

Reseved Memory

Reserved Memory and Prefetchable Memory (1-20MB) Range for this Root Bridge.

Reserved I/O

Reserved I/O (4K/8K/12K/16K/20K) Range for this Root Bridge.

3.5 Boot Settings

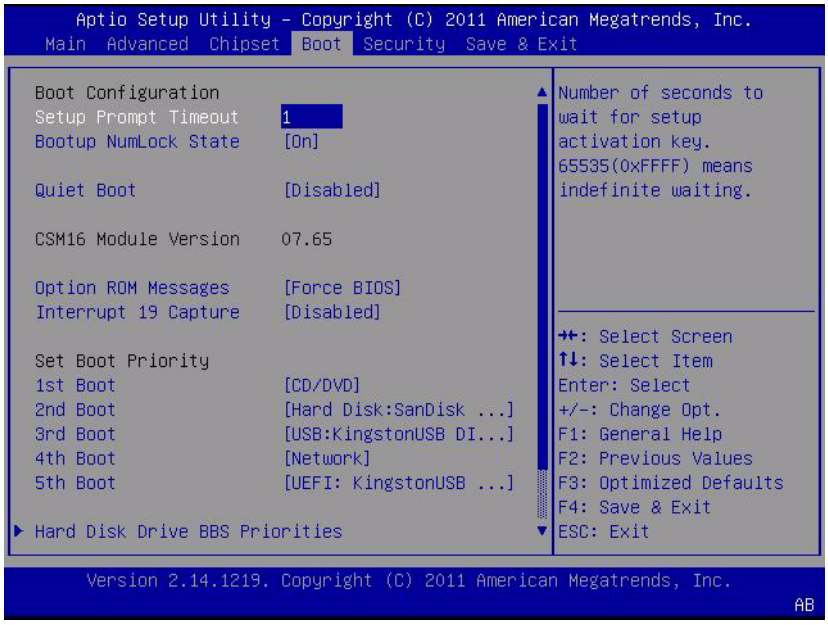

Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
Main Advanced Chipset Boot Security Save & Exit
Boot Configuration
Setup Prompt Timeout 1
Bootup NumLock State [On]
Quiet Boot [Disabled]
CSM16 Module Version 07.65
Option ROM Messages [Force BIOS]
Interrupt 19 Capture [Disabled]
Set Boot Priority
1st Boot [CD/DVD]
2nd Boot [Hard Disk:SanDisk ...]
3rd Boot [USB:KingstonUSB DI...]
4th Boot [Network]
5th Boot [UEFI: KingstonUSB ...]
Hard Disk Drive BBS Priorities
Number of seconds to wait for setup activation key. 65535(0xFFFF) means indefinite waiting.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.
AB

Figure 3.25 Boot Setup Utility

Setup Prompt Timeout

This item allows users to select the number of seconds to wait for setup activation key.

Bootup NumLock State

Select the Power-on state for Numlock.

Quiet Boot

If this option is set to Disabled, the BIOS displays normal POST messages. If Enabled, an OEM Logo is shown instead of POST messages.

Option ROM Message

Set display mode for option ROM.

Interrupt 19 Capture

This item allows option ROMs to trap interrupt 19.

1st/2nd/3rd/4th/5th Boot

This item allows users to set boot device priority.

3.6 Security Setup

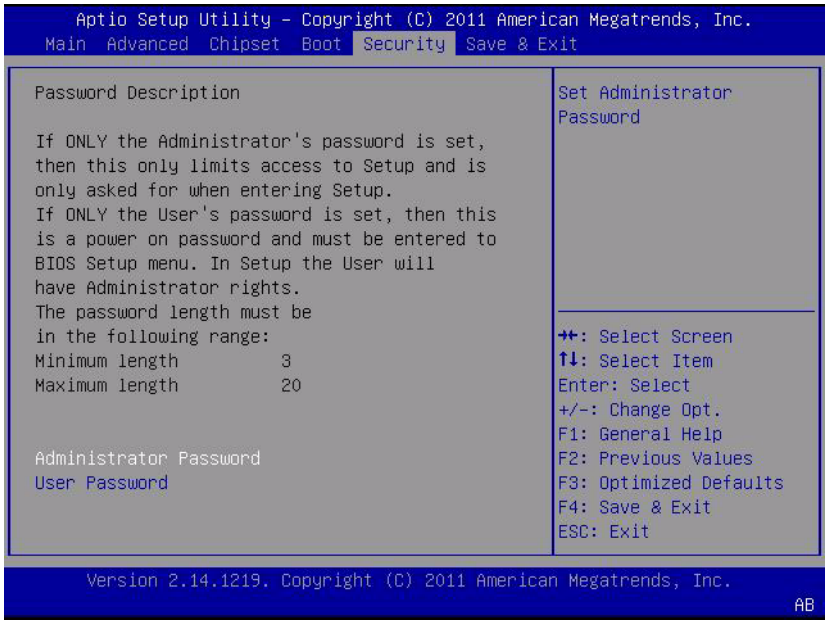

Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
Main Advanced Chipset Boot Security Save & Exit
Password Description
If ONLY the Administrator's password is set, then this only limits access to Setup and is only asked for when entering Setup.
If ONLY the User's password is set, then this is a power on password and must be entered to BIOS Setup menu. In Setup the User will have Administrator rights.
The password length must be in the following range:
Minimum length 3
Maximum length 20
Administrator Password
User Password
Set Administrator Password
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.
AB

Figure 3.26 Security Setup

Select Security Setup from the SOM-6765 Setup main BIOS setup menu. All Security Setup options, such as password selection is described in this section. To access the sub menu for the following items, select the item and press <Enter>:

Change Administrator / User Password: Select this option and press <ENTER> to access the sub menu, and then type in the password.

3.7 Save & Exit

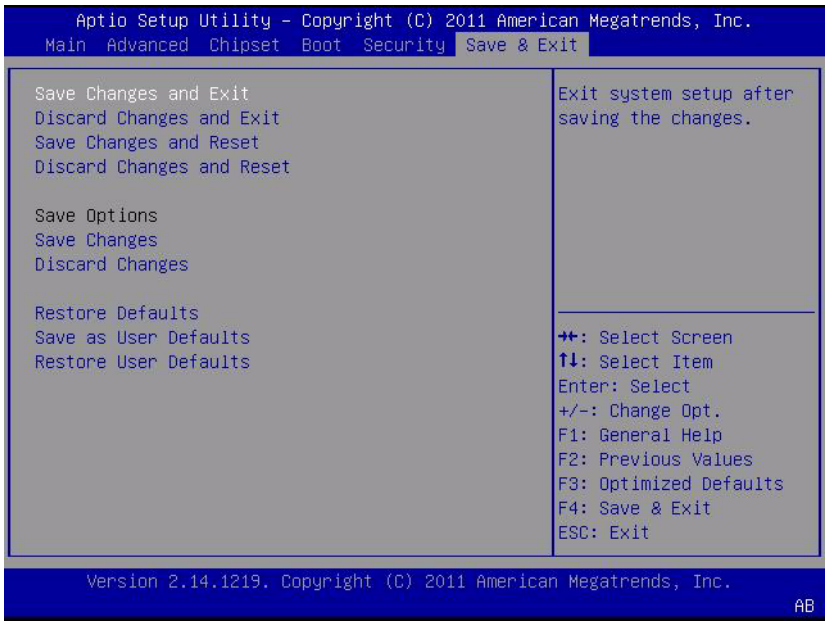


Figure 3.27 Save & Exit

3.7.1 Save Changes and Exit

When users have completed system configuration, select this option to save changes, exit BIOS setup menu and reboot the computer if necessary to take effect all system configuration parameters.

3.7.2 Discard Changes and Exit

Select this option to quit Setup without making any permanent changes to the system configuration.

3.7.3 Save Changes and Reset

When users have completed system configuration, select this option to save changes, exit BIOS setup menu and reboot the computer to take effect all system configuration parameters.

3.7.4 Discard Changes and Reset

Select this option to quit Setup without making any permanent changes to the system configuration and reboot the computer.

3.7.5 Save Changes

When users have completed system configuration, select this option to save changes without exit BIOS setup menu.

3.7.6 Discard Changes

Select this option to discard any current changes and load previous system configuration.

3.7.7 Restore Defaults

The SOM-6765 automatically configures all setup items to optimal settings when users select this option. Optimal Defaults are designed for maximum system performance, but may not work best for all computer applications. In particular, do not use the Optimal Defaults if the users computer is experiencing system configuration problems.

3.7.8 Save User Defaults

When users have completed system configuration, select this option to save changes as user defaults without exit BIOS setup menu.

3.7.9 Restore User Defaults

The users can select this option to restore user defaults.

Chapter 4

S/W Introduction & Installation

4.1 S/W Introduction

The mission of Advantech Embedded Software Services is to "Enhance quality of life with Advantech platforms and Microsoft Windows embedded technology." We enable Windows Embedded software products on Advantech platforms to more effectively support the embedded computing community. Customers are freed from the hassle of dealing with multiple vendors (Hardware suppliers, System integrators, Embedded OS distributor) for projects. Our goal is to make Windows Embedded Software solutions easily and widely available to the embedded computing community.

4.2 Driver Installation

The Intel Chipset Software Installation (CSI) utility installs the Windows INF files that outline to the operating system how the chipset components will be configured.

4.2.1 Windows OS

To install the drivers please connect to internet and browse the website http://support.advantech.com.tw and download the drivers that you want to install and follow Driver Setup instructions to complete the installation.

4.2.2 Other OS

Please contact our local office or channel partners for Drivers/BSP support.

4.2.3 Step 2- Install Intel INF Update Driver for Windows XP

1. Click on the “Chipset” folder and double click the “infinst_autol.exe” file.
2. Follow the driver installation wizard’s instructions to complete driver installation.

4.2.4 Step 3- Install Intel Graphic Driver for Windows XP

1. Click on the “VGA” folder and double click the “Setup.exe” file.
2. Follow the driver installation wizard’s instructions to complete driver installation.

Note! *Intel Graphic Driver allows users to switch display modes with hot keys.*

Mode	Key 1	Key 2	Key 3
CRT	CTRL	ALT	F1
LCD	CTRL	ALT	F3
Graphic Control Panel	CTRL	ALT	F12

Press Key1 + Key2 + Key3 simultaneously to change display mode

4.2.5 Step 4- Install Audio Driver for Windows XP

1. Click on the “Audio” folder and double click the “WDM_R228_XP.exe” file.
2. Follow the driver installation wizard’s instructions to complete driver installation.

4.2.6 Step 5- Install Intel Ethernet Driver for Windows XP

1. Click on the “LAN” folder and double click the “Autorun.exe” file.
2. Follow the driver installation wizard’s instructions to complete driver installation.

Appendix A

Watchdog Timer

This appendix gives you the information about the watchdog timer programming on the SOM-6765 CPU System on Module.
Sections include:

- Watchdog Timer Programming

A.1 Programming the Watchdog Timer

Trigger Event	Note
IRQ	IRQ7, 9, 11 (default disable) IRQ can be set in BIOS
NMI	N/A
SCI	Power button event
Power Off	Support
H/W Restart	Support
External WDT	N/A

For details, please refer to iManager & Software API User Manual Chapter 6. Programming Overview 6.2 Watchdog (WDog) Function Class. Please contact our local office for iManager & Software API User Manual.

Appendix B

Programming GPIO

This Appendix gives the illustration of the General Purpose Input and Output pin setting.
Sections include:

- GPIO Mapping

B.1 GPIO Mapping

GPIO Byte	H/W Pin Name
BIT0	GPO0
BIT1	GPO1
BIT2	GPO2
BIT3	GPO3
BIT4	GPO0
BIT5	GPO1
BIT6	GPO2
BIT7	GPO3

For details, please refer to iManager & Software API User Manual.

Appendix C

System Assignments

This appendix gives you the information about the system resource allocation on the SOM-6765 CPU System on Module.
Sections include:

- System I/O ports
- DMA Channel Assignments
- Interrupt Assignments
- 1st MB Memory Map

C.1 System I/O Port

Table C.1: System I/O Ports

Addr.range(Hex)	Device
0000 - 001F	Direct memory access controller
0000 - 0CF7	PCI bus
0010 - 001F	Motherboard resources
0020 - 0021	Programmable interrupt controller
0022 - 003F	Motherboard resources
0024 - 0025	Programmable interrupt controller
0028 - 0029	Programmable interrupt controller
002C - 002D	Programmable interrupt controller
002E - 002F	Motherboard resources
0030 - 0031	Programmable interrupt controller
0034 - 0035	Programmable interrupt controller
0038 - 0039	Programmable interrupt controller
003C - 003D	Programmable interrupt controller
0040 - 0043	System timer
0044 - 005F	Motherboard resources
004E - 004F	Motherboard resources
0050 - 0053	System timer
0060 - 0060	Standard PS/2 Keyboard
0061 - 0061	Motherboard resources
0062 - 0062	Microsoft ACPI-Compliant Embedded Controller
0062 - 0063	Motherboard resources
0063 - 0063	Motherboard resources
0064 - 0064	Standard PS/2 Keyboard Keyboard
0065 - 0065	Motherboard resources
0065 - 006F	Motherboard resources
0066 - 0066	Microsoft ACPI-Compliant Embedded Controller
0067 - 0067	Motherboard resources
0070 - 0070	Motherboard resources
0070 - 0077	System CMOS/real time clock
0072 - 007F	Motherboard resources
0080 - 0080	Motherboard resources
0080 - 0080	Motherboard resources
0081 - 0091	Direct memory access controller
0084 - 0086	Motherboard resources
0088 - 0088	Motherboard resources
008C - 008E	Motherboard resources
0090 - 009F	Motherboard resources
0092 - 0092	Motherboard resources
0093 - 009F	Direct memory access controller
00A0 - 00A1	Programmable interrupt controller
00A2 - 00BF	Motherboard resources
00A4 - 00A5	Programmable interrupt controller
00A8 - 00A9	Programmable interrupt controller

Table C.1: System I/O Ports	
00AC - 00AD	Programmable interrupt controller
00B0 - 00B1	Programmable interrupt controller
00B2 - 00B3	Motherboard resources
00B4 - 00B5	Programmable interrupt controller
00B8 - 00B9	Programmable interrupt controller
00BC - 00BD	Programmable interrupt controller
00C0 - 00DF	Direct memory access controller
00E0 - 00EF	Motherboard resources
00F0 - 00F0	Numeric data processor
0290 - 029F	Motherboard resources
029C - 029D	Motherboard resources
02F8 - 02FF	Communications Port (COM2)
0378 - 037F	ECP Printer Port (LPT1)
03B0 - 03BB	Intel(R) Graphic Media Accelerator 3600 Series
03C0 - 03DF	Intel(R) Graphic Media Accelerator 3600 Series
03F8 - 03FF	Communications Port (COM1)
0400 - 047F	Motherboard resources
0400 - 047F	Motherboard resources
04D0 - 04D1	Motherboard resources
04D0 - 04D1	Programmable interrupt controller
0500 - 053F	Motherboard resources
0500 - 057F	Motherboard resources
0600 - 061F	Motherboard resources
0680 - 069F	Motherboard resources
06A0 - 06AF	Motherboard resources
06B0 - 06EF	Motherboard resources
0778 - 077F	ECP Printer Port (LPT1)
0B78 - 0B7F	Motherboard resources
0D00 - FFFF	PCI bus
0F78 - 0F7F	Motherboard resources
1000 - 100F	Motherboard resources
D000 - DFFF	Intel(R) N10/ICH7 Family PCI Express Root Port -27D6
E000 - E00F	Standard Dual Channel PCI IDE Controller
E000 - EFFF	Intel(R) N10/ICH7 Family PCI Express Root Port -27D6
E010 - E013	Standard Dual Channel PCI IDE Controller
E020 - E027	Standard Dual Channel PCI IDE Controller
E030 - E033	Standard Dual Channel PCI IDE Controller
E040 - E047	Standard Dual Channel PCI IDE Controller
F000 - F01F	Intel(R) N10/ICH7 Family SMBus Controller - 27DA
F020 - F03F	Intel(R) N10/ICH7 Family USB Universal Host Controller - 27CB
F040 - F05F	Intel(R) N10/ICH7 Family USB Universal Host Controller - 27CA
F060 - F07F	Intel(R) N10/ICH7 Family USB Universal Host Controller - 27C9
F080 - F09F	Intel(R) N10/ICH7 Family USB Universal Host Controller - 27C8
F0A0 - F0AF	Intel(R) N10/ICH7 Family Serial ATA Storage Controller - 27C0
F0B0 - F0B3	Intel(R) N10/ICH7 Family Serial ATA Storage Controller - 27C0
F0C0 - F0C7	Intel(R) N10/ICH7 Family Serial ATA Storage Controller - 27C0
F0D0 - F0D3	Intel(R) N10/ICH7 Family Serial ATA Storage Controller - 27C0

Table C.1: System I/O Ports	
F0E0 - F0E7	Intel(R) N10/ICH7 Family Serial ATA Storage Controller - 27C0
F0F0 - F0F7	Intel(R) Graphic Media Accelerator 3600 Series
FFFF - FFFF	Motherboard resources
FFFF - FFFF	Motherboard resources

C.2 DMA Channel Assignments

Table C.2: DMA Channel Assignments	
Channel	**Function**
0	Available
1	Available
2	Available
3	ECP Printer Port
4	Direct memory access controller
5	Available
6	Available
7	Available

C.3 Interrupt Assignments

Table C.3: Interrupt Assignment	
Interrupt#	**Interrupt source**
NMI	Parity error detected
IRQ0	System timer
IRQ1	Standard PS/2 Keyboard
IRQ2	Available
IRQ3	Communications Port (COM2)
IRQ4	Communications Port (COM1)
IRQ5	Available
IRQ6	Available
IRQ7	Available
IRQ8	System CMOS/real time clock
IRQ9	Available
IRQ10	Available
IRQ11	Intel(R) N10/ICH7 Family SMBus Controller ®C 27DA
IRQ12	Microsoft PS/2 Mouse
IRQ13	Numeric data processor
IRQ14	Available
IRQ15	Available
IRQ16	Intel(R) N10/ICH7 Family PCI Express Root Port -27D6
IRQ16	Intel(R) N10/ICH7 Family USB Universal Host Controller ®C 27CB
IRQ18	Intel(R) N10/ICH7 Family PCI Express Root Port -27D6
IRQ18	Intel(R) N10/ICH7 Family USB Universal Host Controller - 27CB
IRQ18	Standard Dual Channel PCI IDE Controller

Table C.3: Interrupt Assignment	
IRQ19	Intel(R) N10/ICH7 Family PCI Express Root Port - 27D6
IRQ19	Intel(R) N10/ICH7 Family Serial ATA Storage Controller - 27C0
IRQ19	Intel(R) N10/ICH7 Family USB Universal Host Controller - 27C9
IRQ22	High Definition Audio Controller
IRQ 23	Intel(R) N10/ICH7 Family USB Universal Host Controller ®C 27C8
IRQ 23	Intel(R) N10/ICH7 Family USB2 Enhanced Host Controller - 27CC
MSI	Intel(R) 82583V Gigabit Network Connection
MSI	Intel(R) Graphics Media Accelerator 3600 Series

C.4 1st MB Memory Map

Table C.4: 1st MB Memory Map	
Addr. range (Hex)	**Device**
00000000 - 00000FFF	Motherboard resources
00000000 - 00000FFF	Motherboard resources
00000000 - 00003FFF	Motherboard resources
000A0000 - 000BFFFF	Intel(R) Graphic Media Accelerator 3600 Series
000A0000 - 000BFFFF	PCI Bus
000C0000 - 000DFFFF	PCI Bus
000E0000 - 000EFFFF	PCI bus
000F0000 - 000FFFFF	PCI Bus
BF800000 - BFFFFFFF	PCI Bus
C0000000 - FEBFFFFF	PCI Bus
DFC00000 - DFCFFFFF	Intel(R) Graphic Media Accelerator 3600 Series
DFD00000 - DFD1FFFF	82583V Gigabit Network Connection
DFD00000 - DFDFFFFF	Intel(R) N10/ICH7 Family PCI Express Root Port -27D6
DFD20000 - DFD23FFF	82583V Gigabit Network Connection
DFE00000 - DFEFFFFF	Intel(R) N10/ICH7 Family PCI Express Root Port -27D4
DFF00000 - DFE03FFF	High Definition Audio Controller
DFF04000 - DFF043FF	Intel(R) N10/ICH7 Family Serial ATA Storage Controller - 27C0
DFF05000 - DFF053FF	Intel(R) N10/ICH7 Family USB2 Enhanced Host Controller - 27CC
E0000000 - EFFFFFFF	System board
FEC00000 - FEC00FFF	Motherboard resources
FED00000 - FED003FF	High precision event timer
FED14000 - FED19FFF	System board
FED1C000 - FED1FFFF	Motherboard resources
FED1C000 - FED1FFFF	Motherboard resources
FED20000 - FED8FFFF	Motherboard resources
FED45000 - FED8FFFF	Motherboard resources
FEE00000 - FEE00FFF	Motherboard resources
FF000000 - FFFFFFFF	Intel 82802 Firmware Hub Device
FF000000 - FFFFFFFF	Intel 82802 Firmware Hub Device
FFE00000 - FFFFFFFF	Motherboard resources

Trusted ePlatform Services

ADVANTECH

www.advantech.com

Please verify specifications before quoting. This guide is intended for reference purposes only.

All product specifications are subject to change without notice.

No part of this publication may be reproduced in any form or by any means, electronic, photocopying, recording or otherwise, without prior written permission of the publisher.

All brand and product names are trademarks or registered trademarks of their respective companies.

© Advantech Co., Ltd. 2012